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SEE Characterization of a Magnetometer Front-End ASIC using a RHBD Digital Library in AMS 0.35um CMOS

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A radiation-hardened-by-design (RHBD) digital library, developed for the Austria Microsystems (AMS) 0.35um CMOS technology has been applied in a mixed-signal ASIC that operates as a multi-channel data acquisition system for magnetometers using anisotropic magneto-resistances (AMR). The circuit has been tested in the Heavy-Ion facilities of the Université Catholique de Louvain-la-Neuve (HIF-UCL). The experimental results demonstrate a LET threshold of 22.5 MeV·cm²/mg and absence of latchup up to 81.8 MeV·cm²/mg. SEE performance of the A/D converters has also been measured. This radiation-tolerant performance is obtained at the cost of a penalty in area and power with respect to the unhardened technology.

Primary authors: Mr ARIAS-DRAKE, Alberto (Dpto. de Electrónica y Electromagnetismo, U. de Sevilla); Mr RAMOS-MARTOS, Juan (Instituto de Microelectrónica de Sevilla); Mr CARRANZA-GONZÁLEZ, Luis (Dpto. de Electrónica y Electromagnetismo, U. de Sevilla); Mr SORDO-IBAÑEZ, Samuel (Dpto. de Electrónica y Electromagnetismo, U. de Sevilla)

Co-authors: Mr RAGEL-MORALES, Antonio (Instituto de Microelectrónica de Sevilla); Mrs PIÑERO-GARCÍA, Blanca (Dpto. de Electrónica y Electromagnetismo, U. de Sevilla); Mr CEBALLOS-CÁCERES, Joaquín (Instituto de Microelectrónica de Sevilla); Mr MORA-GUTIÉRREZ, José Miguel (Instituto de Microelectrónica de Sevilla); Mr MUÑOZ-DÍAZ, Manuel (Dpto. de Electrónica y Electromagnetismo, U. de Sevilla); Mr LAGOS-FLORIDO, Miguel Ángel (Instituto de Microelectrónica de Sevilla); Dr ESPEJO-MEANA, Servando (Dpto. de Electrónica y Electromagnetismo, U. de Sevilla)

Presenter: Mr RAMOS-MARTOS, Juan (Instituto de Microelectrónica de Sevilla)

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